

control (AGC) circuit with an integrator outputting an accumulated error value, the method comprising the steps of:

inputting a plurality of calibration signals having known frequencies and input power levels into the receiver;

recording calibration data corresponding to each of said plurality of signals, said calibration data including an associated frequency, input power level and accumulated error value for each of said calibration signals;

generating a look-up table comprising said calibration data; and

storing the look-up table in the modem.

2. (once amended) The method of claim 1, further comprising estimating a current input power using said look-up table and a current input frequency and current accumulated error value.

5. (once amended) The method of claim 1, further comprising interpolating additional calibration data using calibration data taken from actual operation of said modem.

10. (once amended) The method of claim 1, further comprising extrapolating additional calibration data from the calibration data obtained from actual operation of said modem.

AS 13. (once amended) The method of claim 1, wherein generating said look-up table further comprises rendering said calibration data as 8-bit data.

14. (once amended) The method of claim 13, wherein generating said look-up table further comprises identifying a maximum value and a minimum value for frequency and input power level, wherein said maximum and minimum values are used to scale the 8-bit data.

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CS 22. (once amended) A cable modem device, comprising:
a tuner that tunes to an input signal;
a modem coupled to the tuner, the modem having a receiver with an automatic gain control (AGC) circuit and a memory; and
a look-up table stored in the memory, the look-up table containing calibration data associating an input power level, input frequency and accumulated error value for frequencies and power levels within an operating range of said modem;
wherein said look-up table is used to compute input power to the receiver based on a current frequency and accumulated error value.

23. (once amended) The cable modem device of claim 22, wherein the calibration data in said look-up table is stored in the memory as 8-bit data.

24. (once amended) The cable modem device of claim 23, wherein the memory also contains a maximum value and a minimum value for the frequency and the input power level, wherein said maximum and minimum values are used to scale the 8-bit data.

Please add the following new claim:

25. (new) The cable modem device of claim 22, wherein said calibration data is generated from actual operation of said modem.

REMARKS

This is a full and timely response to the non-final Official Action mailed **April 11, 2002** (Paper No. 8). Reconsideration of the application in light of the above amendments and the following remarks is respectfully requested.

By the forgoing amendment, the specification and claims have been amended. Specifically, new claim 25 has been added and original claims 3, 4 and 15-21 have been cancelled. Thus, claims 1, 2, 5-14 and 22-25 are currently pending for the Examiner's consideration.

Drawings:

In the outstanding Office Action, the Examiner objected to Figures 5 and 6 because the label on the vertical axes of those figures was not mentioned in the specification. Consequently, Applicant has amended the specification to contain appropriate references to the axis labels used in Figures 5 and 6. Support for this amendment can be found in the drawings and the specification as filed. (e.g., p. 3, lines 18-21; p. 8, lines 15-18, etc.).

Therefore, following entry of the present amendment, the drawings are thought to be in compliance with applicable rules. Therefore, withdrawal of the objection to the drawings is respectfully requested.

Specification:

In the outstanding Office Action, the Examiner objected to the specification based on a number of informalities, including the apparent inclusion of a second abstract to an unrelated invention. These informalities have all been corrected by the foregoing amendments.

In particular, Applicant has expressly canceled the erroneous second abstract. Applicant has not seen the "second abstract" and does not know if that second, unrelated abstract was erroneously included with the application as filed or became inadvertently associated with the present application during processing in the U.S. Patent Office. A review of Applicant's file copy of the application as filed reveals only a single, relevant abstract. In any event, the

foregoing amendments delete the erroneous second abstract and clearly identify the abstract Applicant intended to include.

Additionally, the Examiner expressly indicated a confusing and contradictory section of the specification at p. 8, lines 2-5. Applicant agrees that the original specification made some obviously incorrect statements at this point and others. These misstatements have been corrected in the attached substitute specification. Applicant also wishes to note that the provisional application, Application No. 60/155,802, filed September 27, 1999, clarifies the explanation of the invention on these and other points. The Examiner may wish to refer to that related provisional application in which additional support for the changes made in the attached substitute specification can be found.

The undersigned hereby declares that no new matter has been added to the attached substitute specification, but that all additions and changes are supported by the specification as originally filed, the parent provisional application and/or the general knowledge and conventions of the ordinarily skilled person in this art.

Following entry of the present amendment, including the substitute specification, the specification is thought to be in compliance with all applicable rules and unobjectionable. Therefore, withdrawal of the objection to the specification is respectfully requested.

35 U.S.C. § 112, first paragraph

The Examiner rejected claims 1-24 under 35 U.S.C. § 112, first paragraph, alleging that the disclosure does not enable one skilled in the art to practice the invention. Specifically, the Examiner indicated that claims 1, 15 and 22 “lack clarity because the feature ‘look-up table values are used to compute input power to the receiver’ is not sufficiently described in the specification to enable one with ordinary skill in the art to use the invention.” (Paper No. 8, p. 3).

This rejection is respectfully traversed for the following reasons. The specification has been amended herein to more clearly state the operation of the invention. Additionally, the claims have been amended to clearly recite the invention.

By way of explanation, the look-up table is generated by applying a number of signals of known frequency and power level to the modem. (*See* Fig. 2, step 202; p. 6, line 2 et seq.) The accumulated error value is then detected for each known frequency and power level. Thus, the calibration data consists of an input frequency, power level and accumulated error value for each calibration signal. (*See* Fig. 2, step 208; p. 6, line 10 et seq.) After calibration, when the input power is to be determined, the input frequency and accumulated error value, which are known, are used to identify the corresponding input power using the look-up table.

Amended claim 1 recites:

1. A method for estimating input power in a cable modem device having a tuner and a modem, the modem having a receiver including an automatic gain control (AGC) circuit with an integrator outputting an accumulated error value, the method comprising the steps of:

inputting a plurality of calibration signals having known frequencies and input power levels into the receiver;
recording calibration data corresponding to each of said plurality of signals, said calibration data including an associated frequency, input power level and accumulated error value for each of said calibration signals;
generating a look-up table comprising said calibration data; and
storing the look-up table in the modem.

Consequently, Applicant submits that, following the amendments to the claims and specification herein, the now-claimed invention is clearly enabled to one of skill in the art based on the present specification and the parent provisional patent application. Thus, the rejection under 35 U.S.C. § 112, first paragraph is no longer appropriate and should be reconsidered and withdrawn.

35 U.S.C. § 101

Finally, the Examiner has rejected the claimed invention under 35 U.S.C. § 101 based on the same issues discussed above with regard to the rejection under 35 U.S.C. § 112, namely that the invention was not clearly described in the original specification and claims. Consequently, the Examiner concluded that the claimed invention was inoperative and, therefore, lacked utility as required by § 101.

Applicant respectfully traverses this rejection on the same basis described above. The obvious misstatements made in the original specification have been corrected in the attached substitute specification. The invention is now clearly described and claimed such that one of

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skill in the art could both make and use the invention as claimed. Consequently, the rejection under 35 U.S.C. § 101 is not longer appropriate and should be reconsidered and withdrawn.

For the foregoing reasons, the present application is thought to be clearly in condition for allowance. Accordingly, favorable reconsideration of the application in light of these remarks is courteously solicited. If any fees are owed in connection with this paper which have not been elsewhere authorized, authorization is hereby given to charge those fees to Deposit Account 18-0013 in the name of Rader, Fishman & Grauer PLLC. If the Examiner has any comments or suggestions which could place this application in even better form, the Examiner is requested to telephone the undersigned attorney at the number listed below.

Respectfully submitted,



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Claims Appendix

For the convenience of the Examiner, and in accordance with 37 CFR 1.121(c)(1)(ii), all pending claims are presented below in their current form. Amendments made by the present paper are indicated with added material being underlined and deleted material being bracketed.

1. (once amended) A method for estimating input power in a cable modem device having a tuner and a modem, the modem having a receiver [with] including an automatic gain control (AGC) circuit with an integrator outputting an accumulated error value, the method comprising the steps of:

inputting a plurality of calibration signals having known [input] frequencies and [known] input power levels into the receiver;

recording [a] calibration data [point] corresponding to each of said plurality of signals [in a calibration matrix], said calibration data including an associated frequency, input power level and accumulated error value for each of said calibration signals;

[connecting the calibration points in said calibration matrix to generate] generating a look-up table comprising said calibration data[values stored in a look-up table]; and

storing the look-up table in the modem[, wherein said look-up table values are used to compute input power to the receiver].

2. (once amended) The method of claim 1, further comprising estimating a current input power using said look-up table and a current input frequency and current accumulated error value [wherein the calibration point in the recording step is an accumulated value of an integrator in the AGC circuit].

3. (canceled) The method of claim 2, wherein the look-up table values are a plurality of accumulated values of an integrator in the AGC circuit, each of said plurality of accumulated values corresponding with a single frequency and a single amplitude.

4. (canceled) The method of claim 1, wherein the recording step records at least one selected from the group consisting of the input frequency of the calibration signal, the input power of the calibration signal, and an accumulated value of an integrator in the AGC circuit as the calibration point.

5. (once amended) The method of claim 1, further comprising [wherein the connecting step includes] interpolating additional calibration data using calibration data taken from actual operation of said modem [between the calibration points].

6. (unchanged) The method of claim 5, wherein the interpolating step is conducted using a first order equation.

7. (unchanged) The method of claim 5, wherein the interpolating step is conducted using a second order equation.

8. (unchanged) The method of claim 5, wherein the interpolating step is conducted using an audio tone.

9. (unchanged) The method of claim 5, wherein the interpolating step is conducted using a known voltage variable amplifier curve.

10. (once amended) The method of claim 1, further comprising [wherein the connecting step includes the step of interpolating between the calibration points, and wherein the method further comprises the step of] extrapolating additional calibration data from the calibration data obtained from actual operation of said modem [beyond the range of the calibration points].

11. (unchanged) The method of claim 10, wherein the extrapolation step is conducted using linear projection from a localized amplitude corresponding to a selected calibration frequency.

12. (unchanged) The method of claim 11, wherein the extrapolation step is repeated for each calibration frequency.

13. (once amended) The method of claim 1, wherein generating said look-up table further comprises rendering said calibration data [the storing step stores the look-up table] as 8-bit data.

14. (once amended) The method of claim 13, wherein generating said look-up table further comprises identifying [the storing step also stores] a maximum value and a minimum value for [the] frequency and input power level [the amplitude], wherein said maximum and minimum values are used to scale the 8-bit data.

15. (canceled) A method for estimating input power in a cable modem device having a tuner and a modem, the modem having a receiver with an automatic gain control (AGC) circuit, the method comprising the steps of:

inputting a plurality of calibration signals having known input frequencies and known input power levels into the receiver;

recording an accumulated value in an integrator in the AGC corresponding to each of said plurality of calibration signals as a calibration point in a calibration matrix;

interpolating between the calibration points and extrapolating from the calibration points in said calibration matrix to generate look-up table values stored in a look-up table; and storing the look-up table in the modem, wherein said look-up table values are used to compute input power to the receiver.

16. (canceled) The method of claim 15, wherein the interpolation step is conducted using a first order algorithm.

17. (canceled) The method of claim 16, wherein the interpolation step is conducted using a second order algorithm.

18. (canceled) The method of claim 15, wherein the interpolating step is conducted using an audio tone.

19. (canceled) The method of claim 15, wherein the interpolating step is conducted using a known voltage variable amplifier curve.

20. (canceled) The method of claim 15, wherein the look-up table values are stored as 8-bit data.

21. (canceled) The method of claim 15, wherein the storing step also stores a maximum value and a minimum value for the frequency and the amplitude, wherein said maximum and minimum values are used to scale the 8-bit data.

22. (once amended) A cable modem device, comprising:

- a tuner that tunes to an input signal;
- a modem coupled to the tuner, the modem having a receiver with an automatic gain control (AGC) circuit and a memory; and
- a look-up table stored in the memory, the look-up table containing [a plurality of look-up table values generated by inputting a plurality of calibration signals having known input frequencies and known input power levels into the receiver; recording an accumulated value in an integrator in the AGC corresponding to each of said plurality of calibration signals as a calibration point in a calibration matrix, and interpolating between the calibration points and extrapolating from the calibration points in said calibration matrix to generate the look-up table values,] calibration data associating an input power level, input frequency and accumulated error value for frequencies and power levels within an operating range of said modem;

wherein said look-up table [values are] is used to compute input power to the receiver based on a current frequency and accumulated error value.

23. (once amended) The cable modem device of claim 22, wherein the calibration data in said look-up table [values are] is stored in the memory as 8-bit data.

24. (once amended) The cable modem device of claim 23, wherein the memory also contains a maximum value and a minimum value for the frequency and the [amplitude] input power level, wherein said maximum and minimum values are used to scale the 8-bit data.

25. (new) The cable modem device of claim 22, wherein said calibration data is generated from actual operation of said modem.